Extended Study on Characterizing Business Angels and Their Impact on Start-up Success

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Abstract—**The study is based on previous research that described angel investment and its possible effects in determining a start-up's success through analyzing 2114 business angels by investigating their professional and entrepreneurial experience, academic formation and their demographic characteristics. This study introduces three new case studies and further broadens the scope of the previous research. The study aims at validating the previous theory that the business angels invest in start-ups that have close proximity to their academic and professional backgrounds. Additionally, this study verifies the previous founding that angel investors of established technology companies had invested in more than one start-up or had experience founding or managing start-ups themselves.**

Keywords-business angel, start-ups, venture capital, seed and early stage funding

I. Introduction

Both for start-ups themselves and experts in the entrepreneurial scene, funding has always been a topic of concern and constant discussion. Much of the discussion [1] has centered on how young companies can somehow find a way of being financed at very early phases of their development [2]. Besides the well-known financial means that banks offer, there is a growing market of equity investors in the form of venture capital or private equity companies, among which some individual investors that operate on their own have made a name for themselves: Business Angels.

Business angels (BAs) or angel investors are, according to specialized literature on the topic, individuals who invest heavily with their own means in young, private companies and who during the funding process provide a very high amount of their own capital, while not being a friend or relative of the company's founders [3] [4].

While venture capital (VC) and private equity (PE) companies have been closely scrutinized, BAs have not been of special interest for researchers in the industry [5], despite their important role for young companies in particular. The available work on these individuals identifies a research gap in determining a relationship between the human capital of a BA and the eventual success of a start-up [6]. The purpose of the following analysis is to provide a detailed picture of BAs and to validate the previous theory from reference paper [1] on how some of BAs' similarities, such as professional experience and academic background, relate to the success of chosen companies.

The following pages first summarize the available insights from existing literature on the topic. To understand the benefits of BA financing, it is necessary to investigate BAs' influential, unique human competences on the progress of invested start-ups. With a novel dataset, various traits of BAs, such as professional background, socio-demographical characteristics, start-up experience, angel investment experience and academic background, are analyzed. This study then leads to a clear portrait of the average BA in the US. In addition, three new case studies, different from the ones in study [1] and selected randomly, are presented to recognize similar characteristics of BAs and their impact on the companies they invested in. Finally, the study discusses key findings and concludes with comments for future research.

II. Theory

Before analyzing the relationship between a BA's role within the structure and history of a start-up and its eventual success, it is of special importance to showcase the current status and latest findings of available research on the topic.

A. *Difficulties of start-up fund raising*

Start-ups have recently been a matter of special interest not only because of how much attention they have received from media outlets, but also because of their critical importance for the economy [7]. They are essential drivers of major innovations in various industries. Despite this, start-ups often struggle for a number of reasons to assure the adequate financial means to keep their operation afloat and ensure their survival in a competitive economic environment [2] [8].

As a result, entrepreneurs often seek to obtain risk capital in the form of equity due to the fact that access to debt finance is difficult to procure [4]. This source of external equity can either come in the form of BA financing or VC financing. When it comes to arousing the interest of BAs or VC companies, it can be challenging to convince investors of the start-up's growth and investment potential [9]. For instance, it is a difficult task to assess a start-up's performance at the seed

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and early stages of its development [8]. Not only is raising capital hard because of the elevated risk a start-up pertains, but also because these young companies often have little to no experience in this area and do not yet have an established work routine [10]. Many of these young companies go bankrupt afterwards, with 23% of them doing so within the first two years after their foundation [11]. Moreover, the markets in which they operate tend to change considerably fast.

B. Seed and early stage financing

Start-ups are frequently dependent on external financing at different stages, especially in the form of informal capital [12]. This latter source of capital, which is needed for seed or early stage start-ups, can be contributed by BAs or the founders themselves together with friends and family [4]. Figure 1 shows the common types of investors and the different funding stages in which they normally operate.

Informal Investors		Formal Investors
Founders, friends and family	Angel investors	Venture capital funds
Seed stage investments	*Early stage investments*	*Later stage investments*

Financing Gap

Figure 1. Equity investors at the seed, early and later stage in firm growth [13]

BAs are natural informal investors that, unlike their VC counterparts, tend to operate in a wider industry sector spectrum and who mostly invest during a company's early stages [14]. Reference [15] emphasizes that 28% of all BAs invest during the seed stage where 45% do so during a company's early stages. Regarding the market's size, [16] have pointed out that the informal investment sources have overtaken the formal ones. Reference [17] has published new research data that shows that VCs invest during the seed stage about 2% of the time, with 34% covering the early stages and the rest of them mostly investing in expansions and the later stages of a company.

Specialized literature [18] describes that it is precisely in this gap that BA investment flourishes. This role was particularly strengthened by the financial crisis, in which banks and venture capitals notoriously stopped financing start-ups at their riskiest stages. Banks have kept a low profile as important funding partners for start-ups because of the high risk normally associated with them. On the other hand, VC investors continuously try to minimize the risk they undertake by financing start-ups at their more intermediate and mature stages [13].

1) Business angel financing

BAs are "wealthy individuals, often former entrepreneurs themselves, who place their money into early stage entrepreneurial ventures, acting alone or in angel groups" [19]. With an ever-increasing role, BAs not only support young companies financially, they also help them in other entrepreneurial aspects [4][18][20].

Even though BAs are vital for seed and early start-up financing, they are less recognized than VC [21]. Many fields regarding their impacts and characteristics, especially human capital characteristics such as reputation, education and entrepreneurial experience, have yet not been investigated thoroughly [4][5][6]. However, it is crucial to examine the relationship between human competences and the success of start-ups [6]. Reference paper [1] provides a detailed introduction on BA financing.

2) Venture capital financing

VC is a highly prevalent resource of capital for young and small technology start-ups with potential for high returns and great risk [4] [12] [24]. Existing research defines VCs as "independent, professionally managed, dedicated pools of capital, that focus on equity and equity-linked in privately held, high growth companies" [3]. VCs play an important role in supporting companies during their growth stage. Established companies such as Google, Ebay and Apple have all raised capital from VCs [27]. Reference paper [1] provides a detailed introduction on BA financing.

III. CHARACTERISTICS OF BUSINESS ANGELS

A. Data collection

In order to extend the little previous research done on how traits of a BA can influence a start-up [6], data used for empirical analysis was collected from several sources. To compile an up-to-date list with active BA data, a list of 2,114 BAs was obtained from CrunchBase. CrunchBase is a crowd-funded platform that readily provides information on start-ups, their founders, their investors and both their company founding and funding processes. With the purpose of reaching the insight of a 'stereotypical' BA, different attributes were defined and completed using data from CrunchBase, LinkedIn and Twitter. The attribute list of human capital contains data on the BAs socio-demographic characteristics, work and funding experience as well as academic education.

B. Variables

Different variables were defined and suitable scales were selected. These variables were chosen as it is of particular interest to find out the extent to which characteristics of different BAs within the same or different companies resemble each other. On the other hand, it can shed light on the components that make up the success of a company, especially in the case when both the academic and professional experience of a BA correlates directly with the industry sector the company operates in.

C. Descriptive statistics

It is noticeable that 96% of the sampled individuals are male. More than a half are American and 89% of them currently reside in the United States. This result directly correlates with [17] case study that determined that the majority of available data on BAs actually originates from the United States. Notably, after the US, the most common countries of origin for the sampled BAs are India, Canada, UK and France. The average year of birth for the sample is 1972, which corresponds to an average age between 44 and 45 years. Interestingly, about 86% of the individuals in the sample have themselves founded or cofounded a start-up.

Regarding their professional careers, it can be seen that 95% of the 1,223 sampled individuals have had managerial roles as CEOs, chairmen or high-ranking executive positions within a company at some point in their careers. Remarkably, half of them had already been managers before that and about 30% of them had had a technical occupation. The clerical/administrative, consultant and mentor types are grouped under the category of "others".

The last part of the analysis focuses on the BA's academic background. More than half of the sampled individuals majored in business, 44% of them have a technical major, and 24.7% completed a degree in another area. Some BAs even completed two degrees. It is interesting to note that 39.3% completed a master's degree and 38% received a bachelor's degree. Moreover, only 6.5% hold a doctoral degree.

A further valuable understanding on BAs is provided by analyzing, which industry sectors they currently work in. 43% of the BAs are active in the internet-based sector, followed by the VC and PE Sector (19%) and IT services (18.8%).

IV. Case studies

The previous dataset was enriched with company data and funding information retrieved from Pitchbook. Pitchbook is a Private Equity & Venture Capital database with detailed investment and investor information on private companies. As Pitchbook is a professional and comprehensive industry database, cases whose information was extracted from this database hence provide a reliable and inclusive foundation for qualitative analysis of good quality. After building up a BA profile in the previous section, the next section connects BAs with start-ups. Three additional cases are presented with the purpose of visualizing a cause and effect relationship between a BA and a company where similarities regarding the respective BA's human capital are highlighted and presented.

A. Pinterest

The first deals with Pinterest, an established social networking platform among notable ones, including Facebook, Twitter, and Tumblr.

Pinterest was founded in 2009 with first product launch in 2010. The platform is a visual discovery tool that allows its users, 'Pinners', to collect, organize, and share visual information; it also provides e-commerce capability to connect brands and users on this platform. Since founding, Pinterest has secured 10 recorded rounds of equity financing with 1.34 billion US raised at a valuation of 11 billion USD.

The social network company raised its first four rounds of financing almost entirely from BAs from 2009 to 2011. Institutional VCs provided capital to Pinterest from the fifth round of financing. Figure 2 illustrates Pinterest's 10 funding rounds and its investors in a chronological sequence.

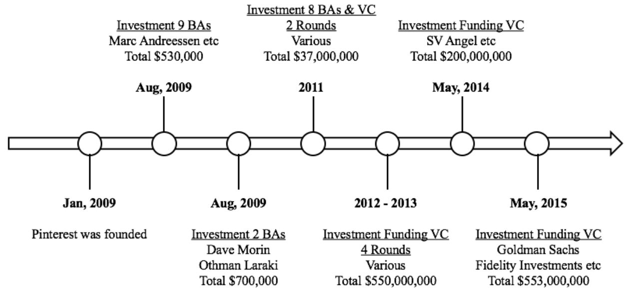

Figure 2. Pinterest timeline

Despite Pinterest's popularity now, people did not like the product when the co-founders first launched the platform. At the beginning of company launch, Pinterest did not gain huge user traction and consequently failed to raise capital from institutional VCs.

As a result, BAs dominated Pinterest's first four rounds of financing. Out of 21 investors in these four rounds, there were 19 BAs, including Marc Andreessen. They account for 90% of total investors. These BAs not only provided a capital support to the company, but also introduced later investors to Pinterest. Not until two years later, the company finally started attracting a lot of industry attention in the Silicon Valley and was able to raise capital from VC firms [35].

In order to find possible effects of the BA funding on Pinterest, the human capital similarities among the BAs are first recognized.

By observing the industrial sector where the BAs operate, it is noticeable that they all operate in technology, social networking, or media sectors. It is no coincidence that these sectors are the ones that Pinterest's service seeks to capture and operate. Their academic backgrounds vary but are concentrated in a few fields, including computer science, engineering, and business management; with their backgrounds, BAs hence provide support from multiple perspectives to Pinterest. All 19 BAs have held management positions at other technology companies, such as Google. It is also remarkable that 14 of these BAs have previously founded start-ups. Another observation is that all of the BAs reside in the US with a great concentration in San Francisco, where Pinterest is headquartered and operated. Finally, it is also worth noting that at the time of Pinterest investment, these BAs all had made multiple angel investments.

B. Affirm

In order to obtain a comprehensive picture of investors and start-ups, companies of different sizes were analyzed. While Case 1 investigated a company with a multi-billion-dollar valuation, case 2 looks at a rapidly growing company, Affirm.

This company, founded in 2012 in San Francisco, offers online financing services to consumers, aiming at brining innovation to financial services industry that has long been waiting for changes. Affirm connects consumers and online stores. Consumers are able to receive instant financing for their purchases on these stores and pay back their debt over a period of time as they choose.

Affirm went through four rounds of equity financing and has accumulatively raised 427.5 million USD in total at a current valuation of 800 million USD. Figure 3 shows chronologically various rounds of financing that the company received.

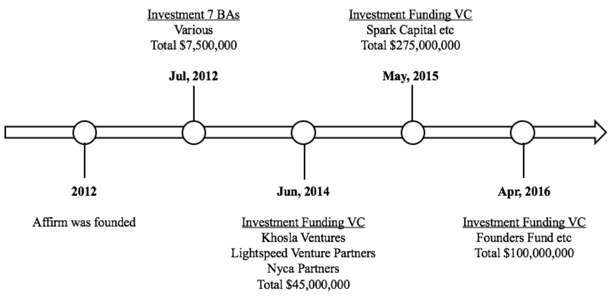

Figure 3. Affirm timeline

The company raised its first found in July 2012 right after the company was founded. All seven investors who participated in this round were BAs. As Affirm's founder Max Levchin, a member of "Paypal Mafia", has extensive network in the region with his experiences in technology companies, the company was able to bring in influential angel investors, including Peter Thiel, co-founder of Paypal, and Jeremy Stoppelman, co-founder of Yelp. As a result, these BAs, with great capital resources, invested 7.5 million USD into the company early on.

The company operated for two years after this without raising any additional capital. Since 2014 summer, the company began raising institutional rounds from prestigious Silicon Valley VC firms, such as Khosla Ventures, Lightspeed Ventures, and Andreessen Horowitz.

After examining seven BAs that have taken part in Affirms funding, it can be observed that these BAs share many characteristics despite of their different backgrounds. Six out of seven of them had founded or co-founded a start-up previously. Majority BAs reside in the same region as Affirm: six BAs reside in the USA and all on the west coast, while one BA resides in Sydney, Australia. Majority BAs had previous work relationship with Affirm's founder, and therefore have deep understanding in the sector within which the company is operating. Most of them hold degrees in Management, Computer Science or Mechanical Engineering.

Finally, it is also observed that all of the BAs in Affirm once had high-ranking management roles in other companies with two of them having had technical positions before. All of BAs had invested in at least three companies during the first round and four of them operate their own VC firm.

C. Foursquare

In order to obtain an inclusive insight into the relationship between BAs and successful tech companies, a third case is introduced to the study. Previous two case studies concentrated on companies that were founded on the west coast of the US in the Silicon Valley; the third case investigates a company that was founded on the east coast to further analyze if similar patterns can be identified.

Foursquare is a company that offers services based on location intelligence. Launched in 2009 in New York City by enabling consumers to do check-ins real time and share with friends, Foursquare today helps consumers discover new places and assists brands to connect with their audience in meaningful ways on its platform. Since the founding, the company has gone through 6 rounds of equity financing and raised 243 million USD in capital.

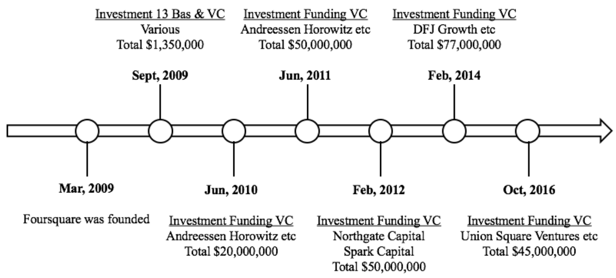

Figure 4. Foursquare timeline

BAs dominated the first round, with 13 out of 15 investors being BAs, as shown in Figure 4 in a chronological order. Some of the notable BAs are Jack Dorsey, Benjamin Horowitz, and Marc Andreessen. After the first round, other VC companies soon followed these BAs and provided follow-on capital to support the company's growth.

All of Foursquare investors reside in the US and they all had invested in a company in the US prior to funding Foursquare. This follows the same patterns seen previously, where BAs invest in the countries they live in. It is notable that a decent portion of these BAs resides in New York City, where Foursquare is located. 12 out of 13 BAs were already active in the internet-based service industry at the time of their investment in the company. All of them had either already founded a company previously or had worked at executive level at a media or technology company. In addition, four BAs held positions or had worked at various VC funds, some of which also joined the later rounds of financing. Finally, majority of BAs hold degree in Management, Computer Science or Mechanical Engineering.

V. RESULTS AND DISCUSSION

A. Results

The objective of this analysis was to determine which human competences present in a BA decisively contribute to the eventual success of a company.

In this context, data referring to BAs has been analyzed and results have been shown. These results are now expanded with the findings from each of the case studies presented in the previous section. After having identified similarities among the BAs for each of six successful companies – Google, Uber and Grockit from paper [1], and Pinterest, Affirm, and Foursquare as new additions – the next step is to show the results taken from each case that point to the same direction.

To do so, Table 1 lists the six cases in the first column and shows the different categories in which the BAs present in each case both diverge or converge in order to round up the key findings.

TABLE I. CASE STUDY – BAS COMMONALITIES

	Investment Experience	Socio-demographic Characteristic		Main industry	Professional Experience			Academic background
	Serial Investor	Nationality	Residence	Sector	Start-up (founder)	Executive job	Dual job (managerial & technical)	Degree program
Google	***	-	***	***	***	***	***	**
Uber	***	**	***	**	***	***	*	**
Grockit	**	***	***	***	***	***	*	*
Pinterest	***	**	***	***	**	***	*	**
Affirm	***	**	**	***	***	***	**	**
Foursquare	***	***	***	**	**	***	*	**

Notes: commonalities in respective category for BAs founded in case studies

*** = all BAs; ** = vast majority; * = several; - = no correspondence

The similarities among BAs observed from three new cases are consistent with those observed from previous three cases. First of all, it is observed that almost all BAs are serial investors who had made multiple angel investments in the past prior to funding the companies studied above. From a socio-demographic perspective, BAs who invest in US start-ups almost all reside in the US, except for one BA. They tend to have a regional focus that they invest in companies that are located close to their residence. Furthermore, from an industry segment view, all six cases show that BAs invest in companies whose business segments are closely related to their own industry experiences. From a professional experience perspective, all BAs at the time of investments had held executive positions at other companies and a high percentage of them had founded companies previously. An important portion of all sampled BAs not only had experience in managerial roles, but also already had experience in more technology-oriented positions, which were often held when these BAs founded their start-ups as technical co-founders. Last but not the least, almost all BAs obtained a degree in Management, Computer Science or Mechanical Engineering

The three new cases presented in this study show a set of similarities that were identified from research [1]. All six cases combined together demonstrate that BAs share many similar characteristics as discussed above.

B. Discussion

Using a sample of 2,114 angel investors, this analysis has strengthened a part of the definition of a BA. According to [29], a BA is defined as someone who often has entrepreneurial experience. 86% of the sampled BAs fit into this definition, as well as all of the investors discussed in the three case studies. Because of their own entrepreneurial experience, some BAs are in a good position to mentor young, small companies.

However, this definition can be extended to include some of the characteristics discussed before. For instance, over 90% of BAs are men and most of them reside in the US. This point directly correlates with [4] observation that BAs often invest in the places where they live and that a majority of innovative start-ups, which coincidentally attract most of the attention of investors, are usually headquartered in the US. The three cases presented before confirm this.

Moreover, Reference [3] has pointed out that angel investors invest in areas in which they have experience of their own and in which they have a genuine interest. The case studies sustain the idea that the academic background and the professional experience of these angel investors correlate with the company's own industry sector. A possible reason for this may be found in [30] work, where it is emphasized that BAs often carry a huge risk on their investments because of the nature of the company's development stage during which they mostly invest. However, it is possibly the case that they try to compliment this risk with their own experience in order avoid huge monetary failures and to enrich a company's structure with their own expertise.

The results from all six cases are presented in Table 1. The three additional cases support the previous theory that it is often a combination of managerial experience and technical knowledge that truly defines an angel investor. This is consistent with the idea that they represent an important asset for new companies.

Another interesting observation from this analysis that coincides with observations from prior research refers to investment behavior. The presented timelines show that all BAs, except for one exception, have been active in a founding round once per company. This is in line positively with [4] work, that concluded that often BAs do not distribute their investments in different stages but actually, almost 75% invest only once in a company [31].

VI. CONCLUSION, LIMITATIONS AND FURTHER RESEARCH

BAs are, in the area of venture financing, just as important as VC [19] [31] [32]. Even though they may not be under the spotlight [4], they help young companies to overcome their funding problems [18]. They usually invest in quantities below 1 million USD [33].

In addition, angel investors are present in the companies they invest in, either as mentors or as external executives [33]. That is why this study, which investigates how BAs potentially influence the course of a start-up though their own human competences, is meaningful in its approach to understand the funding nature of a company. For this purpose, three successful companies were chosen with the objective of identifying similarities among the BAs relevant to each of them. A general overview on the human capital from the 2,114 sampled BAs shows that some characteristics can influence the success of a company. This is achieved with their rich academic formation and wide entrepreneurial and professional experience in a variety of positions [34]. Since BAs in all cases had experience in the sector of the industry from the company they invested it [30], they proved to be a valuable asset for entrepreneurs to more effectively and wisely take decisions.

The present work aims at validating the findings from research [1] through three new case studies. Observations made from new cases are consistent with the previous study. Nonetheless, the following limitations must be kept in mind during the interpretation of combined results. First of all, analysis of BA characteristics was conducted on Crunchbase database, which might not capture all company and investor information. Therefore, the sample investigated does not necessarily represent all BAs and start-up population. Furthermore, only six cases were chosen randomly to find similarities among BAs and the companies examined are all based in the US with a great concentration on the west coast. The relationship between BAs and start-ups might show different patterns in different geographical regions or at various growth stages.

Further researches can be conducted to address the limitations mentioned above. One potential research can be carried out by analyzing BAs information from industry database, such as Pitchbook or Crunchbase, to obtain quantitative results to provide numerical evidence. It is also advisable that BAs' behavior be investigated across different regions to include case studies from Asia, Europe, and Latin America etc., for a more holistic global view.

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